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10/582,269

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EXAMINER

RADEMAKER, CLAIRE L

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,269	Applicant(s) KOBUCHI ET AL.	
	Examiner CLAIRE L. RADEMAKER	Art Unit 1727	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2006 and 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4 and 6-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4 and 6-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/9/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Separator Comprising a Metal Sheet and a Resin Layer.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-4 and 6-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 7 contain the limitation of a fuel-cell separator which is interposed between a plurality of electrolyte assemblies comprising a sealing section which is formed in a manner such that, when the fuel cell is in its yet-to-be assembled condition a vertex of the sealing projection extends beyond a position of contact with the electrolyte assembly (intermediate product) in contrast to a case where the fuel cell is in its assembled condition (final product). For examination purposes, the limitation that the fuel cell is in its assembled condition (final product) was interpreted as the Applicant's invention.

Furthermore, claim 2 contains the limitations “a resin layer formed on a surface of the flat metal sheet” (lines 10-11) and “a rubber layer formed on a surface of the metal sheet” (lines 12-13) which are indefinite because it is unclear whether the resin layer and the rubber layer are the same or not. Page 7 of the instant Specification states that “on a surface of the flat metal sheet serving as a core member is formed a resin layer that is, for example, a rubber layer in which a channel is provided” (page 7, line 23 – page 8, line 1). Therefore, for examination purposes, the terms “resin layer” and “rubber layer” are interpreted as being synonymous and interchangeable. For consistency purposes, only one of these two terms should be used throughout the claims.

Furthermore, claim 2 recites the limitation “the channel” in line 11. There is insufficient antecedent basis for this limitation in the claim.

Furthermore, claim 6 contains the limitation “the high conductive layer is provided with the channel” (line 12) which is indefinite because it is unclear whether the conductive layer is formed within the channel (as shown in Figure 6) or between the channels (as shown in Figure 8 for example). For examination purposes, the claim is interpreted to mean that the conductive layer is formed between fuel gas channels or between oxidation gas channels (as shown in Figure 8 for example).

Furthermore, claim 6 recites the limitation “the channel” in line 12. There is insufficient antecedent basis for this limitation in the claim. For Examination purposes this limitation is interpreted as meaning to read “the fuel gas channel or the oxidizer gas channel”.

Furthermore, claim 7 contains the limitation “wherein the high conductive layer is a thin film” (lines 1-2) which is indefinite because it is unclear exactly what thickness constitutes a “thin” film (i.e. how thin does the film have to be in order to be considered a “thin” film).

Furthermore, claim 11 recites the limitation “the electrically conductive ink” in line 3. There is insufficient antecedent basis for this limitation in the claim.

Furthermore, claim 11 contains the limitations “the covering layer is formed of... having electrical conductivity” (lines 1-2) and “wherein the electrically conductive ink contains: a vehicle composed of... and electrically conductive filler composed of...” (lines 3-6) which are indefinite because it is unclear exactly how the cover layer relates to the electrically conductive ink containing the vehicle and electrically conductive filler. For examination purposes, the limitations are interpreted as meaning that the covering layer comprises an electrically conductive ink, where said conductive ink contains a vehicle composed of thermosetting monomer or thermosetting oligomer and an electrically conductive filler composed of a metal compound or carbon-base material.

Claim Rejections - 35 USC §102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by Endoh et al. (WO 00/44059).

With regard to claim 2, Endoh et al. discloses a fuel-cell separator (7, paragraph [0027]-[0030]; Figures 1 & 3) which is interposed between a plurality of electrolyte assemblies (EAs) (paragraph [0048]; Figure 3) each constructed of an electrolyte layer containing an electrolyte medium and a catalytic electrode disposed on a surface in a thickness-wise direction of the electrolyte layer (paragraph [0048]; Figure 3), the separator comprising:

A separating section for achieving separation between a fuel gas channel and an oxidizer gas channel (paragraphs [0028]-[0029]; Figure 1); and

A sealing section disposed along an outer periphery of the separator for preventing leakage of fuel gas and oxidizer gas (paragraphs [0028]-[0029] & [0009]; Figure 3),

Wherein the separating section is composed of a flat metal sheet serving as a core member (2, paragraph [0030]; Figure 1) and a resin layer (1a / 1b, paragraph [0028]-[0029]; Figure 1) formed on a surface of the flat metal sheet (paragraph [0028]-[0030]; Figure 1), where the resin layer is provided with the fuel gas channel or oxidizer gas channel (3a / 3b, paragraph [0028]-[0029]; Figure 1), and

Wherein the sealing section is composed of a metal sheet (2, paragraph [0030]; Figure 1) and a resin layer (1a / 1b, paragraph [0028]-[0029]; Figure 1) formed on a surface of the metal sheet (paragraph [0028]-[0030]; Figure 1), and is provided with a

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sealing projection extending in parallel with a surface of the electrolyte assembly on which a catalytic electrode is formed (paragraphs [0028]-[0030], [0047], & [0009]; Figures 1 & 3), the sealing section having a vertex which is constituted so as to be brought into pressure-contact with the EA under a resilient force (paragraphs [0028]-[0030], [0047], & [0009]), and

Where the sealing projection has a U-shaped sectional profile when viewed from a direction perpendicular to a direction in which the fuel gas and the oxidizer gas flow (Figures 1 & 3).

The Examiner notes that for examination purposes, the limitation that the fuel cell is in its assembled condition (final product) was interpreted as the Applicant's invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059), as applied to claim 2 above, and further in view of Koretomo et al. (JP 2001-357859).

The disclosure of Endoh et al. as discussed above is fully incorporated herein.

With regard to claims 3-4, Endoh et al. fails to teach a high conductive layer having high electrical conductivity.

Koretomo et al. teaches the concept of a fuel cell separator (5, paragraphs [0017] & [0035]; Figure 1) having a highly conductive layer (7, paragraph [0020]; Figure 1) on the region of the separator that comes into contact with the electrolyte assembly (EA) (paragraph [0020]; Figure 1) in order to decrease the contact resistance therebetween (paragraph [0024]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add concept of a fuel cell separator having a highly conductive layer on the region of the separator that comes into contact with the EA of Koretomo et al. to the fuel cell separator of Endoh et al. in order to decrease the contact resistance therebetween (paragraph [0024]).

8. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059) in view of Koretomo et al. (JP 2001-357859).

With regard to claims 6-7, Endoh et al. discloses a fuel-cell separator (7, paragraph [0027]-[0030]; Figures 1 & 3) which is interposed between a plurality of electrolyte assemblies (EAs) (paragraph [0048]; Figure 3) each constructed of an electrolyte layer containing an electrolyte medium and a catalytic electrode disposed on a surface in a thickness-wise direction of the electrolyte layer (paragraph [0048]; Figure 3), the separator comprising:

A separating section for achieving separation between a fuel gas channel and an oxidizer gas channel (paragraphs [0028]-[0029]; Figure 1); and

A sealing section disposed along an outer periphery of the separator for preventing leakage of fuel gas and oxidizer gas (paragraphs [0028]-[0029] & [0009]; Figure 3),

Wherein the separating section is composed of a flat metal sheet serving as a core member (2, paragraph [0030]; Figure 1) and a resin layer (1a / 1b, paragraph [0028]-[0029]; Figure 1) formed on a surface of the flat metal sheet (paragraph [0028]-[0030]; Figure 1), where the resin layer is provided with the fuel gas channel or oxidizer gas channel (3a / 3b, paragraph [0028]-[0029]; Figure 1), and

Wherein the sealing section is composed of a metal sheet (2, paragraph [0030]; Figure 1) and a resin layer (1a / 1b, paragraph [0028]-[0029]; Figure 1) formed on a surface of the metal sheet (paragraph [0028]-[0030]; Figure 1), and is provided with a sealing projection extending in parallel with a surface of the electrolyte assembly on which a catalytic electrode is formed (paragraphs [0028]-[0030], [0047], & [0009]; Figures 1 & 3), the sealing section having a vertex which is constituted so as to be brought into pressure-contact with the EA under a resilient force (paragraphs [0028]-[0030], [0047], & [0009]), and

Where the sealing projection has a U-shaped sectional profile when viewed from a direction perpendicular to a direction in which the fuel gas and the oxidizer gas flow (Figures 1 & 3),

But fails to teach a high conductive layer having high electrical conductivity.

Koretomo et al. teaches the concept of a fuel cell separator (5, paragraphs [0017] & [0035]; Figure 1) having a highly conductive layer (7, paragraph [0020]; Figure 1) on

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the region of the separator that comes into contact with the electrolyte assembly (EA) (paragraph [0020]; Figure 1) in order to decrease the contact resistance therebetween (paragraph [0024]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add concept of a fuel cell separator having a highly conductive layer on the region of the separator that comes into contact with the EA of Koretomo et al. to the fuel cell separator of Endoh et al. in order to decrease the contact resistance therebetween (paragraph [0024]).

The Examiner notes that for examination purposes, the limitation that the fuel cell is in its assembled condition (final product) was interpreted as the Applicant's invention.

Furthermore, the Examiner notes that the product-by-limitations of claim 7 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (MPEP 2113). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (MPEP 2113). Claim 7 as written does not distinguish the product of the instant application from the product of the prior art.

9. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059), as applied to claim 2 above, and further in view of Kaneko et al. (US 6,383,678).

The disclosure of Endoh et al. as discussed above is fully incorporated herein.

With regard to claims 8-9, Endoh et al. fails to teach a covering layer.

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Kaneko et al. teaches the concept of a fuel cell separator (120, col. 5, lines 64-67; Figure 7) having metal sheet (122, col. 6, lines 1-2; Figure 7) covered with a covering layer / coating layer (125, col. 6, lines 1-8; Figure 7) where the covering layer is formed on the metal sheet surface via an adhesive (128, col. 6, lines 1-8) made of epoxy or phenol (col. 6, lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of a fuel cell separator having a metal sheet covered with a covering layer / coating layer where the covering layer / coating layer is formed on the metal sheet surface via an adhesive of Kaneko et al. to the fuel cell separator of Endoh et al. in order to create a separator having high conductivity and rust/corrosion resistance and which allows the fuel cell to supply a higher voltage in the initial stage and maintain a substantially constant voltage after a considerable long elapsed time (col. 6, lines 23-25 & 56-65; Figure 5).

The Examiner notes that the product-by-limitations of claim 9 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (MPEP 2113). Moreover, a product-by-process limitation is held to be obvious if the product is similar to a prior art product (MPEP 2113). Claim 9 as written does not distinguish the product of the instant application from the product of the prior art.

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10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059) and Kaneko et al., as applied to claim 9 above, and further in view of Katsutoshi et al. (JP 2003-217611).

The disclosure of Endoh et al. as discussed above is fully incorporated herein.

With regard to claim 10, modified Endoh et al. fails to teach the specified composition of the adhesive.

Katsutoshi et al. teaches a fuel cell separator (1, paragraph [0013]; Figures 1-2) comprising a metal sheet (7, paragraph [0014]; Figure 2) covered with a graphite layer / covering layer (5, paragraph [0014]; Figure 2) via a thin film layer / adhesive layer (6, paragraph [0014]; Figure 2), where said thin film layer / adhesive layer can comprise epoxy, phenol resin, or a polyphenylene resin such as polyaniline (paragraphs [0019], [0022], and [0014]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the adhesive of modified Endoh et al with the adhesive / thin film material of Katsutoshi et al. because Katsutoshi et al. teaches that epoxy, phenol, and polyaniline are interchangeable and are known equivalents (paragraphs [0019], [0022], and [0014]) and because polyaniline is known to be an effective adhesive / thin film material and one would have a reasonable expectation of success in doing so.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059) and Kaneko et al. (US 6,383,678), as applied to claim 8 above, and further in view of Blunk et al. (US 2003/0096151).

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The disclosure of Endoh et al. as discussed above is fully incorporated herein.

With regard to claim 11, modified Endoh et al. teaches that the covering layer / coating layer can comprise a porous resin film permeated by carbon powder (col. 6, lines 23-27), which reads on the claim limitation of the covering layer comprising a vehicle for forming rubber or synthetic resin and comprising an electrically conductive filler composed of carbon-base material.

Modified Endoh et al. fails to teach the specified vehicle.

Blunk et al. teaches the concept of a fuel cell separator / bipolar plate (56, paragraphs [0025] & [0027]; Figures 2 & 4-5) comprising a metal sheet (58/60, paragraphs [0025] & [0027]; Figures 4-5) and a covering layer / composite layer (94, paragraph [0027]; Figures 4-5) where the covering layer / composite can be made of a polymer matrix such as epoxy resin or acrylic resin, with thermosetting polymers being most preferred, and conductive filler particles such as graphite, carbon, or metal (paragraph [0027]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of having a covering layer / composite layer comprise a polymer matrix such as epoxy resin or acrylic resin, with thermosetting polymers being most preferred, and conductive filler particles such as graphite or carbon of Blunk et al. to the covering layer of modified Endoh et al. in order to form a covering layer / composite layer that is electrically conductive, oxidation resistant, acid resistant, and has a resistivity less than about 50Ω-cm (paragraph [0027]) and because a polymer matrix such as epoxy resin or acrylic resin, with thermosetting polymers being most

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preferred, and conductive filler particles such as graphite or carbon is known to be an effective covering layer / composite layer and one would have a reasonable expectation of success in doing so.

12. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endoh et al. (WO 00/44059), as applied to claim 2 above, and further in view of Blunk et al. (US 2003/0096151).

The disclosure of Endoh et al. as discussed above is fully incorporated herein.

With regard to claims 8 and 11, Endoh et al. fails to teach a covering layer comprising a vehicle and electrically conductive filler.

Blunk et al. teaches the concept of a fuel cell separator / bipolar plate (56, paragraphs [0025] & [0027]; Figures 2 & 4-5) comprising a metal sheet (58/60, paragraphs [0025] & [0027]; Figures 4-5) and a covering layer / composite layer (94, paragraph [0027]; Figures 4-5) where the covering layer / composite can be made of a polymer matrix such as epoxy resin or acrylic resin, with thermosetting polymers being most preferred, and conductive filler particles such as graphite, carbon, or metal (paragraph [0027]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the covering layer / composite layer of Blunk et al. to the fuel cell separator of Endoh et al. in order to create a separator with improved electrical conductivity, oxidation resistance, acid resistance, and a resistivity less than about 50Ω-cm (paragraph [0027]).

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 2-3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2, 5-6, 9, 11, & 20 of copending Application No. 10/579,067. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim the following:

A fuel cell separator which is interposed between a plurality of electrolyte assemblies each constructed of an electrolyte layer containing an electrolyte medium and a catalytic electrode disposed on a surface in a thickness-wise direction of the electrolyte layer (instant application; claim 2; Application 10/579,067: claim 2), the separator comprising:

A separating section for achieving separation between a fuel gas channel and an oxidizer gas channel (instant application; claim 2; Application 10/579,067: claim 2); and

A sealing section disposed along an outer periphery of the separator for preventing leakage of fuel gas and oxidizer gas (instant application; claim 2; Application 10/579,067: claim 2),

Wherein the separating section is formed of a metal sheet serving as a core member and a resin layer / synthetic resin-made coating layer formed on a surface of the flat metal sheet (instant application; claim 2; Application

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10/579,067: claims 2 & 11), where the resin layer is provided with the fuel gas channels or oxidizer gas channels (instant application; claim 2; Application 10/579,067: claims 2 & 5), and

Wherein on a surface of the resin layer is formed a high conductive layer having higher electrical conductivity than electrical conductivity of the resin layer (instant application; claims 2 & 3; Application 10/579,067: claims 2, 11, 12, & 20)

Wherein the sealing section is provided with a sealing projection extending in parallel with a surface of the electrolyte assembly on which a catalytic electrode is formed, the sealing section having a vertex which is constituted so as to be brought into pressure-contact with the electrode assembly under a resilient force (instant application; claim 2; Application 10/579,067: claims 2 & 9), and

Where the sealing projection has a U-shaped or V-shaped sectional profile when viewed from a direction perpendicular to a direction in which the fuel gas and the oxidizer gas flow (instant application; claim 2; Application 10/579,067: claim 2).

While Application 10/579,067 fails to claim that the sealing section is composed of a metal sheet and a resin layer formed on a surface of the metal sheet, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the sealing section of the separator be made of the same materials / configuration as the separation section of the separator in order to make manufacturing the separator easy and efficient.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Thursday, 8:00AM - 4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/C. L. R./

Examiner, Art Unit 1727

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1727